

**TUBULAR MICROSTRUCTURES VIA CONTROLLED
NANOPARTICLE ASSEMBLY**

ABSTRACT OF THE DISCLOSURE

A process for producing microtubes from nanoparticles includes forming a dispersion of the nanoparticles in a liquid phase and freeze-drying the dispersion to produce microtubes. The nanoparticles have surface functionality capable of self-bonding and bonding with the liquid phase during freeze-drying, particularly surface hydroxy functionality.